

ART. IX.—*New or Little-known Victorian Fossils in
the National Museum, Melbourne.*

PART IV.—SOME SILURIAN OSTRACODA AND PHYLLOCARIDA.

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(With Plates XIII.—XVII).

[Read 14th July, 1904].

INTRODUCTORY REMARKS.

The whole of these Ostracoda now first recorded for Victoria, or described as new, have been obtained from the soft, friable or granular portions of the pale greyish limestone of Cave Hill, Lilydale. For some of this ostracod-bearing material the Museum is indebted to Mr. G. B. Pritchard, whilst other samples were collected by myself from the same locality. The specimen of Cyprosina was collected at Lilydale by the Rev. A. W. Cresswell, M.A.

Of the 26 species of Ostracoda, one-half of the number are forms of *Primitia*, a genus which, ranging from the Cambrian to the Carboniferous formations, seems to have attained its maximum development in Silurian times. The other genera, with the exception of *Cyprosina*, a Middle Devonian form in England, are, generally speaking, of Ordovician and Silurian ages; whilst others are apparently referable to living genera, so far as we are able to judge from the characters of the carapace alone.

With regard to the 17 already known species, now recorded for the first time from Australia, 4 are Ordovician (generally Upper) types elsewhere, 11 are from the Silurian (generally Wenlockian), whilst 1 is of Lower Devonian age (in Canada), and 1 belongs to the Lower Carboniferous (England).

The Phyllocarida also afford some very interesting data for distributional comparison. The genera *Ceratiocaris* and *Aptychopsis* are both characteristic of Silurian strata in Europe and North America, the former genus being found also in the Ordovician. They are both apparently newly recorded for Australia. The genus *Dithyrocaris* is found in the Devonian and Carboniferous of Scotland, and in the Devonian of Germany. In N. America it seems to be confined to the Carboniferous (Illinois and Pennsylvania).

DESCRIPTION OF SPECIES.

OSTRACODA.

Family *Leperditiidae*.

Genus *Isochilina*, Jones.

Isochilina labrosa, Jones. (Pl. XVI., Figs. 3a, b).

Isochilina labrosa, Jones, 1889. *Ann. Mag. Nat. His.*, ser. 6, vol. iii., p. 383, pl. xvii., fig. 11, ii., and woodcuts 3 and 4, p. 384.

Observations.—The Victorian specimen closely resembles the type specimen from the greenish-grey calcareous shale of Cape Bon-Ami, Canada, figured by Rupert Jones. If in anything, our specimen differs in being less steep and more evenly rounded towards the central border. The Canadian specimens occurred in the Lower Helderbergian series, equivalent to the Gedinnian of Western Europe (Lower Devonian).

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Genus *Aparchites*, Jones.

Aparchites subovatus, Jones. (Plate XIV., Figs. 10a-c).

Aparchites subovatus, Jones, 1893. *Quart. Journ. Geol. Soc.*, vol. lxi., p. 292, pl. xii., figs. 7, 8 a-c.

Observations.—This species was figured by Professor Jones from examples obtained from the Upper Ordovician (Stauropcephalus Limestone series) of the Lake District, N. of England. Both smooth and punctate forms are nearly isomorphous with *Primitia minuta*, Eichwald sp. Our specimen is intermediate in character between the typical smooth forms, which it resembles in outline, and the punctate variety, which it also simulates in surface ornament. The present examples seem to emphasise the fact of the variability of this species, and to render the separation of the variety as a distinct species from the typical form, for the present, unnecessary.¹

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Genus *Primitia*, Jones and Holl.

Primitia trigonalis, Jones and Holl. (Plate XV., Figs. 8a-c).

Primitia trigonalis, Jones and Holl, 1865. Ann. Mag. Nat. Hist., ser. 3, vol., xvi., p. 421, pl. xiii., figs. 4 a, b.

Observations.—The English specimens came from the Wenlock Limestone of Malvern. I have referred the example before me to the above species, with at first some hesitation on account of the somewhat elongate carapace, but taking into consideration the general thickness of the carapace and the strong compression of the valve edges, it may provisionally be referred to *P. trigonalis*. It differs from the following species, *P. subtrigonalis*, sp. nov., in its greater relative thickness and compressed margins, and also in the greater angularity in its lateral outline. Our example of the above form carries a series of minute denticles on the posterior edge and on the antero-dorsal angle of the valves.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

¹ Prof. Jones remarks (*loc. cit.*) on the Lake District specimens as follows:—"Figs. 7, 8 appear to be varieties of one form; although possibly if we had better material to study they might be found to be quite distinct."

Primitia subtrigonalis, sp. nov. (Pl. XIII., Figs. 1a-c).

Description.—Carapace convex, margins blunt; lateral outline subtrigonal with evenly rounded dorsal angles; anterior end somewhat produced, posterior broadly rounded. Sub-central pit rather conspicuous and circular. Edge view elongate-ovate, slightly more compressed anteriorly. End view regularly ovate. Edges of valves thickened, especially the dorsal and ventral borders of the left, giving an appearance of overlapping. Surface of valves finely punctate.

Dimensions.—Length of carapace, .7 mm.; height, .5 mm.; thickness, .3 mm.

Affinities.—The above species seems to approach most nearly in outline *P. trigonalis*, Jones and Holl,¹ from the Wenlock Limestone, but it differs in the more elongate form of the carapace, the blunter edges of the valves and in having a well-marked sub-central depression.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Primitia punctata, Jones. (Pl. XIII., Figs. 2a-c).

Primitia punctata, Jones, 1887. Ann. Mag. Nat. Hist., ser. 5, vol. xix., p. 193, pl. vii., figs. 9 a, b.

Observations.—The long-oblong carapace with its strongly convex sides, the usually faint mid-dorsal sulcus and the punctate surfaces of the valves confirms the relationship of our examples with the above species.

P. punctata was originally described from the shales over the Wenlock Limestone of Shropshire, England, and I have since recorded it from the Silurian (Wenlockian) of Mulde, Gothland.²

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Primitia semicultrata, sp. nov. (Pl. XIII., Figs. 4a-c).

Description.—Carapace seen from the side, oblong and strongly convex. Dorsal edge straight, ventral nearly so, but slightly

1 Ann. Mag. Nat. Hist., ser. 3, vol. xvi., 1865, p. 421, pl. xiii., figs. 4a, b.

2 Ann. Mag. Nat. Hist., ser. 7, vol. vii., 1901, p. 148.

concave in the centre; extremities of carapace compressed, the edges of the valves forming a flange-like border which, anteriorly, is somewhat produced and sloped gently away to the dorsal and ventral edges; whilst posteriorly the dorsal angle is evenly rounded, and the ventral rather irregularly so, making a wider angle with the ventral border. Edge view sub-triangular, broad posteriorly, and gradually sloping away towards the anterior end, with a depressed area, however, in the region of the dorsal sulcus; thickest in the middle of the posterior third. End view sub-elliptical, rather compressed ventrally, rounded dorsally. Surface of valves finely punctate; with a narrow but distinct median channel, at right angles to the dorsal edge, ending in a small pit-like depression near the centre of each valve.

Dimensions.—Length of carapace, .85 mm.; height, .3 mm.; thickness, 5 mm.

Observations.—The above species seems to present us with a somewhat exceptional type of *Primitia* in the striking character of the flange-like extremities. A comparison of the species which come nearest to this form leads one to see a probable ally in *Primitia renulina*, Jones and Holl,¹ from the Wenlock Limestone of Malvern, England. The latter species is, however, markedly distinct from ours in having a sub-oval valve, and a saddle-shaped depression close to the dorsal margin.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yeringian).

Primitia (?) *matutina*, Jones and Holl. (Pl. XIII.,
Figs. 5a, b).

Primitia ? *matutina*, Jones and Holl, 1865. *Ann. Mag. Nat. Hist.*, ser. 3, vol. xvi., p. 5, pl. xiii., figs. 7 a, b.

Observations.—The above species, which was described from the Upper Ordovician (Upper Bala) of Shropshire, closely resembles our specimen, which unfortunately is imperfect, in its general features, both in outline and in the relative compression of the valves. The figured specimen of *P. matutina* referred to is a right valve, and may therefore be the more readily com-

¹ *Ann. Mag. Nat. Hist.*, ser. 3, vol. xvi., 1865, p. 419, pl. xiii., figs. 5a, b.

pared with our specimen figured in the same aspect. The ventral border in the latter example is more strongly curved than that in *P. matutina* from Shropshire, and there is also a faint mid-dorsal pit which was not seen in the English specimen, although this feature is characteristic of *Primitia*. The dimensions given of the English specimen slightly exceed those of our form. In view of the slight differences referred to above, the specific determination is given with some reserve.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yeringian).

Primitia reticristata, Jones. (Pl. XIII., Figs. 7a-c).

Primitia reticristata, Jones, 1887. Sil. Ostrac. Gothland, p. 5.

P. reticristata, Jones, 1888. Ann. Mag. Nat. Hist., ser. 6, vol. i., p. 406, pl. xxii., figs. 15 a-c.

P. reticristata, Jones, Krause, 1891. Zeitschr, Deutsch. Geol. Gesellsch, p. 495, pl. xxx., figs. 8 a-d, 9 a-d.

Observations.—The previous occurrences for this neat and characteristic *Primitia* are Fröjel and Mulde, Gotland (Silurian), and also from the drifted Silurian blocks of N. Germany. Our specimens are typical, and they are not rare.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yeringian).

Primitia (cf.) *obsoleta*, Jones and Holl. (Pl. XIII.,
Figs. 8a-c).

Primitia obsoleta, Jones and Holl, 1865. Ann. Mag. Nat. Hist., ser. 3, vol. xvi., p. 423, pl. xiii., figs. 12 a-c.

Observations.—The present example agrees most nearly with the above species in the form of the carapace and the simple flanged border, which, however, in our specimen does not die away towards the anterior extremity as in Jones and Holl's specimen. The original specimen came from the Silurian drifted blocks of Scandinavian limestone, North Germany.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yeringian).

***Primitia halli*, sp. nov.** (Pl. XIV., Figs. 2a-c).

Description.—Carapace elongate and sub-rhomboidal as seen from the side, with both the anterior and posterior angles, dorsal and ventral, rather sharply truncated; dorsal border straight, ventral slightly concave. Dorsal furrow sub-triangular. Dorsal margin having a narrow flange which is continued partly along the antero- and postero-dorsal margins. Edge view compressed ovate, thickest in the anterior third. Anterior end compressed, posterior compressed and somewhat bluntly rounded. End view sub-cordate. The right valve somewhat smaller than the left. Surface somewhat uneven or sparsely pitted.

Dimensions.—Length of carapace, 1.08 mm.; height, .43 mm.; thickness, .35 mm.

Observations.—The above species is apparently distinct from any hitherto known forms of *Primitia*. The only species which is at all comparable with ours is *P. furcata* Jones and Holl¹, but this is much higher posteriorly, whilst anteriorly it tapers from the curved ventral to the dorsal margin, and the hinder portion of the carapace is considerably thicker and blunt-ended.

This species may very appropriately be associated with the name of Mr. T. S. Hall, M.A., with whom I had the pleasure of first visiting the Cave Hill quarry, and on which occasion we obtained material fairly rich in ostracoda.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerri-gian).

***Primitia elongata*, Krause, *var. nuda*, Jones.** (Pl. XIV., Figs. 3a-c).

Primitia elongata, Krause, *var. nuda*, Jones, 1893. Quart. Journ. Geol. Soc., vol. xlix., p. 298, pl. xiii., fig. 6.

Observations.—Our examples agree exactly with Prof. Jones' figure with the exception that the dorsal sulcus is represented by a well-defined depression. Both the type and the variety originally came from the Ordovician, of Scandinavia and Scotland respectively.

¹ Ann. Mag. Nat. Hist., ser. 5, vol xvii., 1886, p. 413, pl. xiv., figs. 15a, b.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerinian).

Primitia paucipunctata, Jones and Holl. (Pl. XIV.,

Figs. 4a-c; Pl. XV., Figs. 2a-c).

Primitia variolata, var. *paucipunctata*, Jones and Holl, 1865. *Ann. Mag. Nat. Hist.*, ser. 3, vol. xvi., p. 419, pl. xiii., figs. 6 c, d.

P. paucipunctata, Jones and Holl, 1886. *Ibid.*, ser. 5, vol. xvii., p. 409, pl. xiv., figs. 3 a, b.

Observations.—The example here figured on Plate XV., Fig. 2, is somewhat more elongate than those of this species already known, but there is probably a great amount of variation in the carapace. In general outline the figured form referred to is, in its lateral aspect, closely comparable with the foregoing variety of *P. elongata*, but the edge view does not bear out the comparison. The scattered depressions on the hinder portion of the valves serve to distinguish this from related forms. Fig. 4 of Plate XIV. is probably an immature specimen, but is more typical in its shape.

P. paucipunctata is a well-known form in the English Silurian strata.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerinian).

Primitia striata, Krause. (Pl. XV., Figs. 3a-c).

Primitia ? striata, Krause, 1891. *Zeitschr. Deutsch. Geol. Gesellsch.*, p. 496, pl. xxxi., figs. 4, 5 a-c.

Observations.—Our specimen, which is unfortunately imperfect, differs from the above species in having an acuminate anterior extremity, instead of being squarely rounded off, as in the examples figured by Dr. Krause; and the general shape of the carapace is more elongate. The species is, however, a very variable one, and the present example may therefore be regarded, in the absence of other specimens, as merely a sub-variety; like the original examples, this one is longitudinally and interruptedly striate. Krause's type specimens came from the Silurian drifted block of Scandinavian limestone, North Germany.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Primitia semicircularis, Jones and Holl. (Pl. XV., Figs. 4a-c).

Primitia semicircularis, Jones and Holl, 1865. *Ann. Mag. Nat. Hist.*, ser. 3, vol. xvi., p. 424, pl. xiii., figs. 10, a-c.

Observations.—The specimen figured by Jones and Holl from the Silurian drifted limestone of N. Germany almost exactly matches our specimen, but the latter is not quite so acutely produced anteriorly.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Primitia unicornis, Ulrich sp. (Pl. XV., Figs. 6a, b).

Leperditia unicornis, Ulrich, 1879. *Journ. Cincinn. Nat. Hist. Soc.*, vol. ii., p. 10, pl. vii., fig. 4.

Primitia unicornis, Ulrich sp., Jones, 1890. *Quart. Journ. Geol. Soc.*, vol. xlvi., p. 7, pl. iv., figs. 8-13.

Observations.—This species shows a large amount of variation in its general shape, being typically faboid, with a shallow dorsal depression and a posterior tubercle usually situated near the ventral angle, but in our specimen seen near the middle of the posterior border. *P. unicornis* has hitherto been recorded only from the Upper Ordovician of Wales and the United States.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Family *Cytheridae*.

Genus *Xestoleberis*, G. O. Sars.

Xestoleberis holliana, sp. nov. (Pl. XIII., Figs. 3a-c).

Description.—Carapace elongate ovoid. Seen from the side elongate or subrectangular, dorsal margin slightly convex, rounded at the ends; anterior margin meeting the ventral border bluntly, and forming a slightly salient angle; the pos-

terior margin makes a wide curve towards the ventral border, meeting it at an obtuse angle. Edge view sub-triangular, very thick posteriorly, gradually tapering towards the front. End view sub-triangular and inflated, but flattened on the ventral surface and somewhat depressed along the dorsal line. Valves slightly unequal. Surface of valves smooth or feebly punctate.

Dimensions.—Length of carapace, .94 mm.; height, .42 mm.; thickness, .64 mm.

Observations.—This species seems to show decided affinities towards *Xestoleberis corbuloides*, Jones and Hall SD.¹ It differs from it, however, in the greater angularity and width of the posterior extremity of the valves. I have taken the opportunity to name this species after Dr. H. B. Holl, F.G.S., who did so much good work on Palaeozoic Ostracoda in conjunction with Professor T. Rupert Jones.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerinian).

Xestoleberis lilydalensis, sp. nov. (Pl. XIV., Figs. 1a-c, 5a-c, 8a, b.)

Description.—Carapace seen from the side narrow-oblong; ends unequally rounded; the posterior extremity narrow and sharply rounded; the anterior, broadly curved and terminating somewhat abruptly at the ventral angle, forming by the development of flanges a small beak-like projection; dorsal margin gently convex, ventral nearly straight. Surface sparsely punctate. Edge view subovate, tumid, greatest thickness a little in front of the posterior third, and tapering more or less evenly to the anterior end. End view depressed cordate.

Dimensions.—Spec. 1. Length of carapace, .53 mm.; height, .21 mm.; thickness, .32 mm.

Type.—Spec. 2. Length of carapace, .78 mm.; height, .35 mm.; thickness, .46 mm.

Observations.—An Ordovician *Xestoleberis* (*X. wrightii*) has been figured and described from the Chair of Kildare, Leinster.

¹ *Cythere corbuloides*, Jones and Hall, *Ann. Mag. Nat. Hist.*, ser. 4, vol. iii., 1869, pp. 211, 212, pl. xv., figs. 4a-e, 5a, b.

Xestoleberis corbuloides, *Id.*, *ibid.*, ser. 5, vol. xix., 1887, p. 410.

Ireland, by Professor Jones and to which form the next variety described is assigned. The present specimens, although agreeing with the former in thickness and edge view of the carapace, are quite distinct, since *X. wrightii* has an ovate form of carapace.

The present specimens show considerable variation, but the same general characters serve to connect them specifically.

Fig. 5, it should be noticed, is shown with the ventral side uppermost, whilst in Fig. 8 it is turned downwards. In the latter figure the posterior edge of the left valve is apparently displaced beyond the edge of the opposing one.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Xestoleberis wrightii, Jones, *var. oblonga*, nov. (Pl. XV., Figs. 1a, b).

Observations.—The published figures¹ of this species are not nearly so elongate as our specimen, and since the latter is longer and altogether larger than the already known forms of the species it may be distinguished as a variety of *X. wrightii*.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerugian).

Genus *Aechmina*, Jones and Hall.

Aechmina jonesi, sp. nov. (Pl. XIV., Figs. 11a, b).

Description.—Carapace tumid, with a slightly concave ventral, and strongly convex dorsal border; ends unequally rounded. Near the ventral border of each valve and towards the posterior extremity there is a short, blunt and oblique spine. Edge view subovate.

Dimensions.—Length of carapace, .82 mm.; height, to base of spine, .57 mm.; thickness, about .6 mm.

Observations.—The above form seems to bear intermediate characters between *A. bynesi* Miller sp. Upper Ordovician)² and *A. cuspidata* Jones and Holl. (Silurian).³

1 *Xestoleberis wrightii*, Jones, 1890: Quar. Journ. Geol. Soc., vol. xlv., p. 28, pl. iv., figs., 14, 15a-c.

Xestoleberis (?) aff. *wrightii*, Jones, Krause: Zeitschr. Deutsch. Geol. Gesellschaft., 1891, p. 512, pl. xxxiii., figs. 9a-c.

2 Cincinn. Quar. Journ. Sci., vol. i., 1874, p. 123, fig. 10.

3 Ann. Mag. Nat. Hist., ser. 4, vol. iii., p. 218, pl. xiv., fig. 8 and woodcut, fig. 2.

I have named this species after the doyen of workers on the fossil Ostracoda, Professor T. Rupert Jones, F.R.S., and who first imparted to me an interest in this group of fossils.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerignian).

Family *Cypridae*.

Genus *Argilloecia*, G. O. Sars.

Argilloecia acuta, Jones and Kirkby. (Pl. XV., Figs. 6a-c).

Argilloecia aequalis, var. *acuta*, Jones and Kirkby, 1895. Ann. Mag. Nat. Hist., ser. 6. vol. xvi., p. 457, pl. xxi., fig. 8.

Observations.—Both the above species and the variety were originally described from the Lower Carboniferous Limestone series of Yorkshire and the Lake District of England. Our specimen is indistinguishable from the variety *acuta* in every particular, so that for the present we may regard it as a form that has persisted throughout Devonian times. The so-called variety is here recorded in the specific sense, as it seems sufficiently distinct from *A. aequalis*,¹ and is, so far as we know, the older form, judging from the present occurrence.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerignian).

Family *Bairdiidae*.

Genus *Macrocypris*, G. S. Brady.

Macrocypris flexuosa, sp. nov. (Pl. XIII., Fig. 6).

Description.—Carapace, elongate, siliquate and flexuose; seen from the side, highest in the middle; dorsal edge boldly rounded in the centre, and concave at both ends; ventral margin strongly convex in the middle, sloping gently to the acuminate anterior extremity; posterior end probably much attenuated, but partly wanting in our specimen. Edge view elongate-ovate with compressed and attenuate extremities.

Dimensions.—Length of carapace when perfect, about 2.07 mm.; greatest width, .64 mm.; thickness, .46 mm.

¹ Jones and Kirkby: Ann. Mag. Nat. Hist., ser. 5, vol. xviii., 1886, p. 263, pl. ix., figs. 6a, b.

Observations.—The nearest allied palaeozoic *Macrocypris* which may be at all compared with the above form is *Macrocypris vinei*, Jones.¹ *M. vinei*, however, does not, in any of its varieties, possess an acute anterior, nor so sloping an antero-ventral margin: moreover there is no attenuation of the posterior extremity as in our form. *M. flexuosa* very nearly approaches the recent *M. tenuicauda*, G. S. Brady,² in general form.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerignian).

***Macrocypris* (cf.) *vinei*, Jones.** (Pl. XIV., Figs. 7a-c).

Macrocypris vinei, Jones, 1887. *Ann. Mag. Nat. Hist.*, ser. 5, vol. xix., p. 179, pl. iv., figs. 1-3, and woodcut.

M. vinei, Jones, 1887. *Silur. Ostrac. Gothland*, p. 6.

M. vinei, Jones, 1888. *Ann. Mag. Nat. Hist.*, ser. 6, vol. i., p. 396, pl. xxii., figs. 1 a-c, 2.

Observations.—The Lilydale specimens differ principally in the higher and more flexuose carapace, the sloping anterior, and the more evenly rounded posterior, extremity. The above species, to which ours seems closely related, if not identical, is not uncommon in the Silurian of Gotland.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerignian).

Genus *Bythocypris*, G. S. Brady.

***Bythocypris holli*, Jones.** (Pl. XIV., Figs 9a, b, young form; Pl. IV., Figs. 1a-c ♂, Figs. 2a-c ♀).

Bythocypris hollii, Jones, 1887. *Ann. Mag. Nat. Hist.*, ser. 5, vol. xix., p. 184, pl. v., figs. 1 a, b, 2; pl. vi., figs. 3 a, b, 4 a, b.

Observations.—This fine species is distinguished by its smooth, reniform and nearly symmetrically ended carapace, its semicircular back and gently sinuous ventral border. It is a

1 *Ann. Mag. Nat. Hist.*, ser. 5, vol. xix., 1887, p. 179, pl. iv., figs. 1-3 and woodcut.

2 *Rep. Chall. Zool.*, pt. iii., 1880, p. 41, pl. ii., figs. 1a-f.

well-known form in the Silurian of England and Gotland, and has also occurred in the Scandinavian limestone blocks in the drift of North Germany. It is interesting to note the variation in the carapace of the forms now figured, probably due to sexual differences. Somewhat similar varieties have been figured by Jones (loc. supra cit.). The example with a high carapace may be distinguished from *B. phillipsiana*, J. and H. sp.¹ by the nearly semicircular form of its valve.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yeringian).

***Bythocypris caudalis*, Jones.** (Pl. XV., Figs. 7a-c).

Bythocypris caudalis, Jones, 1889. Ann. Mag. Nat. Hist., ser. 6, vol. iv., p. 270, pl. xv., figs. 2 a-c, 3 a-c.

Observations.—The peculiar posterior extremity of this form is fairly well seen in the present example; and the compression of the carapace serves to distinguish it from the otherwise similarly-shaped *Pontocypris mawii*, Jones,² as also does the larger size of the left valve.

This species also occurs at Wisby, Gotland.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yeringian).

***Bythocypris phaseolus*, var. *elongata*, Jones.** (Pl. XV., Figs. 5a, b).

Bythocypris phaseolus var. *elongata*, Jones, 1889. Ann. Mag. Nat. Hist., ser. 6, vol. iv., p. 271, pl. xv., figs. 8 a-c.

Observations.—This variety was discovered by Lindström in the red clay of Wisby, Gotland (base of the *Stricklandinia Maris*). Our figured example is even more elongate than the Gotland specimen described by Prof. Jones, but otherwise agrees with it.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yeringian).

1 cf. Jones: Ann. Mag. Nat. Hist., ser. 5, Vol. xix., 1887, p. 187, pl. v., figs. 3a, b, 4a-c.
2 Ann. Mag. Nat. Hist., ser. 5, vol. xix., 1887, p. 182, pl. iv., figs. 4a-d, 6, 7.

Family *Cypridinidae*.Genus *Cyprosina*, Jones.

Cyprosina, sp. (Pl. XVI., Fig. 4; Pl. XVII., Fig. 1).

Observations.—This somewhat fragmentary specimen seems to agree most nearly with the genus *Cyprosina*, and is apparently a left valve. It differs from *C. whidbornei*¹ of the Devonian of England in having more compressed ends and a greater breadth at the posterior extremity. This specimen was collected by the Rev. A. W. Cresswell, M.A.

Locality and Horizon.—Cave Hill, Lilydale. Silurian (Yerignian).

PHYLLOCARIDA.

Family *Ceratiocaridae*.Genus *Ceratiocaris*, McCoy.

Ceratiocaris pritchardi, sp. nov. (Pl. XVII., Figs. 2, 2a).

Description.—Carapace pyriform, deep behind, narrower in front and rather acute; back gently curved; ventral margin forming a bold curve and meeting the posterior margin at a sharp angle, whilst it curves more gently towards the anterior region, where it is somewhat concave. Abdominal margin deeply concave. Surface gently rounded near the back and anteriorly, more tumid along the ventral side and terminating in a narrow and conspicuous flange. From about the middle of the carapace to the flattened ventral margin the surface is relieved by elongate tubercular ridges and incised striae running generally parallel with the ventral border.

Segments and telson not known.

Dimensions of Carapace.—Greatest length, 23 mm.; greatest width, 14 mm.

Observations.—The carapace of *C. pritchardi* is quite distinct, in its general shape, from any known species of *Ceratiocaris*, the nearest approach to it being shown in *C. halliana*, Jones

¹ Geol. Mag. Dec. ii., vol. viii., p. 338, pl. ix., figs. 1-3, 5.

Ann. Nat. Hist., ser. 7, vol. i., 1898, p. 340, pl. xvii., fig. 8.

and Woodward.¹ In that species, however, the ventral margin is less strongly curved, and the carapace more elongate; the superficial ornament, moreover, is merely striate or finely wrinkled.

Locality and Horizon.—Wandong, Victoria. Silurian (Melbournian). Presented by G. B. Pritchard, Esq.

Ceratiocaris, (cf.) **murchisoni**, Agassiz, sp. (Pl. XVII., Figs. 5, 6).

Onchus murchisoni, Agassiz, 1839. In *Silur. Syst.*, p. 607, pl. iv., fig. 10 (not figs. 9 and 11); *Onchus*, fig. 63?; *Ichthyodorulite*, fig. 64.

Leptocheles (murchisoni), McCoy, 1851. *Synops. Brit. Pal. Foss.*, Fasc. 1, p. 176.

Ceratiocaris murchisoni (Ag.), Jones and Woodward, 1888. *Brit. Pal. Phyll.*, pt. i. (*Pal. Soc. Mon.*), p. 16, pl. iii., figs. 4 a, b; pl. iv., figs. 1-3; pl. v., fig. 3; pl. vi., figs. 1, 2.

Observations.—The above species seems to be represented in collections only by caudal appendages, no example of a carapace having been found directly associated with those remains. A very close analogy exists between our specimens and the above-named species. In connection with the specimens now under consideration it is interesting to note that the late Sir F. McCoy had, many years ago, tentatively labelled them "*Leptocheles*," but had apparently made no specific comparison, presumably on account of the unpromising appearance of the matrix in which the impressions occur. A wax squeeze taken from these casts in sandstone give surprisingly good results, and even the pittings on the sides of the spines can be in this way distinctly made out in two of the specimens. In England *C. murchisoni* is found in the Ludlow or uppermost Silurian series.

Locality and Horizon.—Kilmore, Range on E. side Common Reserve, Geol. Surv. Vict. Bb 23. Silurian.

(?) **Ceratiocaris**, sp. (Pl. XVII., Figs. 7, 8).

Observations.—The specimens figured are copied from wax squeezes made from specimens which are not uncommon in the

¹ *Brit. Pal. Phyllopora (Phyllocarida)*, pt. 1 (*Pal. Soc. Mon.*), 1888, p. 26, pl. ii., figs. 1, 2, 3, 4 (?); pl. iv., figs. 5, 6; pl. v., figs. 6a, 6b (?).

sandstones of the Moonee Ponds Creek. They are undoubtedly remains of phyllopodous crustacea allied to, if not identical with, *Ceratiocaris*, and seem to be casts of the strong abdominal appendage or style.

Some of the specimens show a fine striation running obliquely to their length and passing over the ridge, or arranged in a V-shaped pattern, such as is often seen on the appendages of phyllocarids.

Similar fragments have been figured by Barrande.¹ The style shown in the figure of *Ceratiocaris papilio*, Salter, given by Jones and Woodward² bears a close resemblance to our specimens.

Locality and Horizon.—Moonee Ponds Creek, near Flemington ("Royal Park"). Silurian (Melbournian).

Family *Rhinocaridae*.

Genus *Dithyrocaris*, Scouler.

Dithyrocaris praecox, sp. nov. (Pl. XVII., Fig. 3.)

Description.—Carapace subquadrate; anterior notch of medium size compared with known species, angular; posterior border angulated, with evidence of posterior spines. Surface of carapace numerously pitted, especially along the ventral borders. Meso-lateral ridges, apparently smooth, strong, and sinuously curved. Appendages, one stout caudal joint, with spinous terminations.

Dimensions.—Length of carapace, 17 mm.; approximate width, 13 mm.; length of caudal appendage, 9 mm.

Observations.—This specimen, although somewhat crushed and relatively displaced, shows decided affinities with the genus *Dithyrocaris*. The hinge-line, so far as can be seen, is comparable with that genus in having a rugose edge. In its medium-sized angular anterior notch and circular surface pittings this species resembles *D. testudinea*, Scouler sp., from the

1 Syst. Sil., vol. i., Supplement, 1872, p. 459, pl. xxxiii., figs. 25, 25a.

2 Brit. Pal. Phyllopora (*Phyllocarida*), pt. i. (*Pal. Soc. Mon.*), 1888, pl. xii., fig. 1.

British Carboniferous formation,¹ but it differs in having a more quadrate carapace, and there are no indications of the linear ornamentation seen in that species.

Locality and Horizon.—Merri Creek, sects. 2 and 3, Kalkallo. Geol. Surv. Vic. Bb 3. Silurian.

Family *Peltocaridae*.

Genus *Aptychopsis*, Barrande.

Aptychopsis victoriae, sp. nov. (Pl. XVII, Fig. 4).

Description.—Carapace sub-ovate; having a rather deep and narrow rostral notch. Valves broadly rounded anteriorly, sharply terminating at the notch; sides almost parallel with the mesial suture. Posterior portion wanting in the type specimen. Surface more or less concentrically grooved or lineated. Internal view of mesial suture ridgelike and rugose.

Dimensions.—Approximate length, 21 mm.; width of carapace, 16 mm.

Observations.—This species differs from the hitherto known forms of *Aptychopsis* in the squareness of the carapace and in the form of the anterior notch.

Locality and Horizon.—Moonee Ponds Creek ("Royal Park"), near Flemington. Silurian.

CORRIGENDA TO "NEW OR LITTLE-KNOWN VICTORIAN
FOSSILS," PART III.

(Vol. xvi., pt. ii., of these Proceedings).

P. 337, line 12 from bottom, read "Figs. 4 and 6."

P. 340, line 3 from bottom, delete "8."

P. 342. In explanation of plate, after Fig. 6 insert "*Styliola fissurella*, var. *multistriata*."

¹ *Argas testudineus*, Records of General Science (Thomson's), vol. i., 1835, pp. 137, 141, fig. 3.

Dithyrocaris testudinea, Scouler sp., Jones and Woodward, Brit. Pal. Phyllop. (Pal. Soc. Mon.), pt. iii., 1898, p. 145, pl. xix., figs. 7-9, etc.

CORRIGENDA TO PAPER "ON A COLLECTION OF UPPER PALAEOZOIC
AND MESOZOIC FOSSILS FROM WEST AUSTRALIA AND
QUEENSLAND."

(Vol. xvi., pt. ii., of these Proceedings).

- P. 311, line 5 from top, for pl. "i." read pl. "xxvii."
 P. 325, line 3 from bottom, for "Allorisma maxima" read "Allo-
 risma maximum." Also p. 333.
 P. 329, line 14 from bottom of page, for "Ctenostreon pectini-
 formis" read "Ctenostreon pectiniforme. Also pp. 333
 and 335.
 P. 330, line 7 from bottom, for "Normannites australe" read
 "Normanites australis." Also p. 333.

Note to above paper on West Australian and Queensland
 Fossils.—On p. 326 the following reference should be inserted
 under *Goniatites micromphalus*, and the name read as *Agathiceras*
 (?) *micromphalum* :—

"*Agathiceras* (?) *micromphalum*, Morris sp., Foord and Crick,
 1897, Cat. Foss. Ceph. Brit. Mus., pt. 3, p. 271, woodcut, fig.
 132 (p. 272)." [According to Messrs. Foord and Crick the suture-
 line and the general form of this shell seem to ally the species
 with *Agathiceras*; so that the species is now regarded as almost
 certainly belonging to that genus. My thanks are due to Mr.
 Crick for pointing out the omission].

EXPLANATION OF PLATES XIII.—XVII.

(Numbers enclosed in square brackets refer to registered
 specimens in the Museum).

PLATE XIII.

(All the figures on this plate magnified 28 diameters).

- Fig. 1.—*Primitia subtrigonalis*, sp. nov. a, Carapace from the
 right side; b, dorsal view; c, end view. [5393].
 ,, 2.—*Primitia punctata*, Jones. a, Carapace from the
 right side; b, dorsal view; c, end view. [5394].
 ,, 3.—*Xestoleberis holliana*, sp. nov. a, Carapace from the
 left side; b, ventral view; c, end view. [5406].

- Fig. 4.—*Primitia semicultrata*, sp. nov. a, Carapace from the left side ; b, dorsal view ; c, end view. [5395].
 „ 5.—*Primitia* (?) *matutina*, Jones and Holl. a, Carapace from the right side ; b, dorsal view. [5396].
 „ 6—*Macrocypris flexuosa*, sp. nov. a, Carapace from the right side ; b, ventral view. [5413].
 „ 7.—*Primitia reticristata*, Jones. a, Carapace from the right side ; b, dorsal view. [5397].
 „ 8.—*Primitia cf. obsoleta*, Jones and Holl. a, Carapace from the right side ; b, dorsal view ; c, end view. [5398].

PLATE XIV.

(All the figures on this plate magnified 28 diameters).

- Fig. 1.—*Xestoleberis lilydalensis*, sp. nov. a, carapace from the left side ; b, dorsal view ; c, end view. [5408].
 „ 2.—*Primitia halli*, sp. nov. a, Carapace from the right side ; b, dorsal view ; c, end view. [5399].
 „ 3.—*Primitia elongata*, Krause, var. *nuda*, Jones. a, Carapace from the right side ; b, dorsal view ; c, end view. [5400].
 „ 4.—*Primitia paucipunctata*, Jones and Holl. a, Carapace from the right side ; b, dorsal view ; c, end view. [5401].
 „ 5.—*Xestoleberis lilydalensis*, sp. nov. a, Carapace from the left side ; b, ventral view ; c, end view. [5409].
 „ 6.—*Argilloecia acuta*, Jones and Kirkby. a, Carapace from the left side ; b, dorsal view ; c, end view. [5412].
 „ 7.—*Macrocypris cf. vinei*, Jones. a, Carapace from the left side ; b, ventral view ; c, end view. [5414].
 „ 8.—*Xestoleberis lilydalensis*, sp. nov. a, Carapace from the right side (showing part of displaced left valve) ; b, ventral view. [5407].

- Fig. 9.—*Bythocypris holli*, Jones. (Young form). a, Carapace showing right valve; b, dorsal view. [5417].
 ,, 10.—*Aparehites subovatus*, Jones. a, Carapace from the right side; b, ventral view; c, end view. [5391].
 ,, 11.—*Aechmina jonesi*, sp. nov. a, Carapace from the right side; b, dorsal view. [5411].

PLATE XV.

(All the figures on this plate are magnified 28 diameters).

- Fig. 1.—*Xestoleberis wrighti*, Jones, var. *oblonga* nov. a, Carapace from the right side; b, dorsal view. [5410].
 ,, 2.—*Primitia paucipunctata*, Jones and Holl. a, Carapace from the left side; b, dorsal view; c, end view. [5402].
 ,, 3.—*Primitia striata*, Krause. a, Carapace from the right side; b, ventral view; c, end view. [5403].
 ,, 4.—*Primitia semicircularis*, Jones and Holl. a, Carapace from the left side; b, dorsal view; c, end view. [5404].
 ,, 5.—*Bythocypris phaseolus*, var. *elongata*, Jones. a, Carapace from the right side; b, ventral view. [5419].
 ,, 6.—*Primitia unicornis*, Ulrich sp. a, Carapace from the right side; b, ventral view. [5405].
 ,, 7.—*Bythocypris caudalis*, Jones. a, Carapace from the right side; b, dorsal view; c, end view. [5418].
 ,, 8.—*Primitia trigonalis*, Jones and Holl. a, Carapace from the right side; b, ventral view; c, end view. [5392].

PLATE XVI.

(All the figures on this plate are magnified 28 diameters).

- Fig. 1.—*Bythocypris holli*, Jones. (♂). a, Carapace from the right side; b, ventral view; c, end view. [5416].
 ,, 2.—*Bythocypris holli*, Jones. (♀). a, Carapace from the right side; b, ventral view; c, end view. [5415].
 ,, 3.—*Isochilina labrosa*, Jones. a, Right valve; b, end view. [5390].
 ,, 4.—*Cyprosina*, sp. Left valve. [1219].

